Claims

1. A process for the preparation of an unsupported olefin polymerisation catalyst comprising:

a) reacting an aluminoxane and a Lewis base in an optionally halogenated hydrocarbon solvent to form a particulate suspension;

b) reacting said suspension with a metallocene complex in an optionally halogenated hydrocarbon solvent; and

c) isolating the olefin polymerisation catalyst;

wherein said Lewis base is phenol, benzyl alcohol, aniline, benzylamine, ethylene glycol, glycerol, bisphenol, triethanolamine, butanediol, 4,4'-isopropylidenediphenol, 3-hydroxypropylene oxide or 1,4-butanediol diglycidyl ether or a mixture thereof.

2. A process as claimed in claim 1 wherein said aluminoxane is MAO.

3. A process as claimed in any one of claims 1 or 2 wherein the optionally halogenated hydrocarbon solvent used during step a) is an optionally halogenated C_{4-12} alkane or C_{6-12} arylene.

4. A process as claimed in claim 3 wherein said hydrocarbon solvent is toluene or xylene.

5. A process as claimed in any one of claims 1 to 4 wherein the solvent employed in step b) is the same as that employed in step a).

6. A process as claimed in any one of claims 1 to 5 wherein the ratio of aluminium in the aluminoxane to Lewis base is 5 to 40 mol/mol.

7. A process as claimed in any one of claims 1 to 6

wherein the metallocene complex is bis(n-Bu-cyclopentadienyl) zirconium dichloride.

8. A process as claimed in any one of claims 1 to 7 wherein the molar ratio between aluminium in the aluminoxane and the transition metal in metallocene is in the range 20:1 to 1000:1.

9. A catalyst obtainable a process as claimed in any one of claims 1 to 8.

10. The use of a catalyst as claimed in claim 9 in olefin polymerisation.

11. Use of the reaction product of an aluminoxane and a Lewis base to form a catalyst carrying suspension in an optionally halogenated hydrocarbon solvent wherein said Lewis base is phenol, benzyl alcohol, aniline, benzylamine, ethylene glycol, glycerol, bisphenol, triethanolamine, butanediol, 4,4'-isopropylidenediphenol, 3-hydroxypropylene oxide or 1,4-butanediol diglycidyl ether or a mixture thereof.

12. A process for the preparation of polyolefins comprising polymerising at least one olefin in the presence of an olefin polymerisation catalyst as claimed in claim 9.

13. A process as claimed in claim 12 wherein said polymerisation takes place in the slurry phase.

14. A process for the preparation of a prepolymerised olefin polymerisation catalyst comprising:

a) reacting an aluminoxane and a Lewis base in an optionally substituted hydrocarbon solvent to form a particulate suspension;

b) reacting said suspension with a metallocene

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complex in an optionally substituted hydrocarbon solvent to form a catalyst;

c) prepolymerising said catalyst in the presence of an olefin; and

d) isolating the prepolymerised catalyst;

wherein said Lewis base is phenol, benzyl alcohol, aniline, benzylamine, ethylene glycol, glycerol, bisphenol, triethanolamine, butanediol, 4,4'-isopropylidenediphenol, 3-hydroxypropylene oxide or 1,4-butanediol diglycidyl ether or a mixture thereof.